Trend Study 25C-3-03

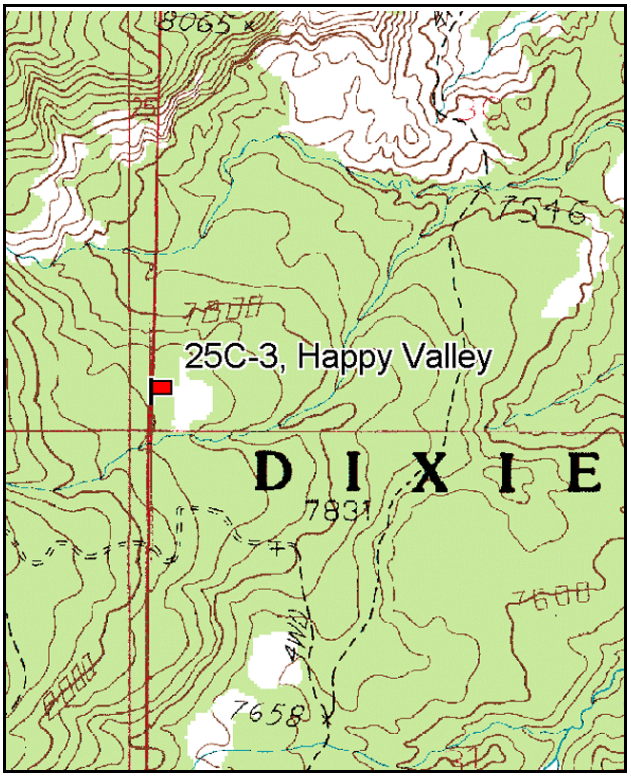
Study site name: Happy Valley . Vegetation type: Logged Ponderosa Pine .

Compass bearing: frequency baseline 170 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 2 and 5 on 1ft.

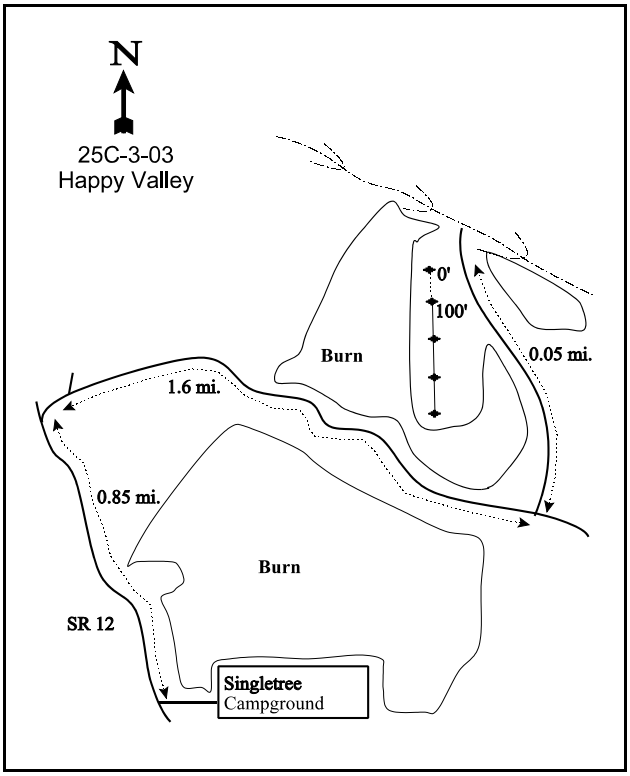
LOCATION DESCRIPTION

From the entrance to Singletree Campground on SR12, drive 0.85 miles north to the turnoff to Happy Valley. Turn east and go 1.6 miles staying on the main road until a minor fork. Turn left onto a faint two-track road and go 0.05 miles to a ponderosa pine and a rebar witness stake located 15 feet off the left side of the road. The baseline starts 75 feet west of the witness post and then runs south. The 0-foot baseline stake is marked with browse tag #7066.



Map Name: Grover

Township 30S , Range 6E , Section 26



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4224250 N, 471865 E

DISCUSSION

Happy Valley - Trend Study No. 25C-3

The Happy Valley trend study is located in a ponderosa pine area that burned in late June of 1984. The fire killed the majority of the ponderosa on the site, but many of the large mature trees survived. A salvage operation by the Forest Service removed some trees and a nearby area was planted with ponderosa seedlings. This area is near the upper limits of normal winter range at an elevation of 7,900 feet. The transect angles up the side of a hill with a slope of 10% to 15% and an eastern aspect. Pellet group data from the trend study site estimated 11 deer, 15 cow and only 1 elk day use/acre (27 ddu/ha, 37 cdu/ha, and 3 edu/ha) in 1998. Some of the cattle sign appeared several months old and the rest looked to be from the previous summer (1997). Deer use appears to be year-long, yet the most prominent use is during the winter and spring. Pellet group data from 2003 estimated 61 deer and 5 elk days use/acre (151 ddu/ha and 12 edu/ha). Most deer pellet groups appeared to be from late spring and early summer use. Cattle had been on the site just prior to the 2003 reading and use was estimated at 14 days use/acre (35 cdu/ha). Cattle use was heavy at the bottom of the hill near the 0 foot stake.

Soil at the site is moderately deep with an estimated effective rooting depth of about 12 inches. The ground is very rocky with scattered large rocks accounting for about 25% of the ground cover. Rock is also common in the soil profile with most concentrated in the top 8 inches. Soil texture is a sandy loam which is neutral in reaction (pH 6.5). Organic matter is relatively high at 3.3%. Percent cover of bare soil has steadily declined from 37% in 1985 to 9% by 2003. Burned wood, downed trees, and pine needles comprise the bulk of the litter. Bare spots show some signs of erosion as do the roads and other disturbed areas, but overall erosion is not a problem on this site.

Ponderosa pine is still a prominent part of the community. Tree density, using the point-quarter method, was estimated at 25 pine trees/acre with an average basal diameter of 6.75 inches in 1994. By 1998, tree density had increased to 140 trees/acre with an average basal diameter of 4.7 inches. Density remained stable in 2003 at 140 trees/acre but average diameter increased to 5.8 inches. Half of the trees sampled in 2003 were greater than 12 feet in height while 42% were young trees in the 1' to 4' range. Line-intercept canopy cover varies on the site, but averaged 13.5% in 2003. There are also a few scattered juniper, pinyon, and Douglas fir trees on the site.

The understory is currently dominated by a variety of browse species including antelope bitterbrush, several species of rabbitbrush, broom snakeweed, and Harriman yucca. There are several other species which occur in limited numbers. Only bitterbrush occurs in sufficient numbers and is palatable enough to be considered a key species. Fire damage to the low-spreading ecotype of bitterbrush appears to be variable as there was an estimated 1,666 plants/acre estimated in 1985. Most of these were young (88%) but 200 mature plants/acre were estimated. Density of bitterbrush was estimated at 1,100 plants/acre in 2003, and it appears to be slowly increasing. Cover of bitterbrush increased slightly between 1994 and 1998, then nearly doubled by 2003 to 9%. Strip frequency has also increased with each reading. Utilization of bitterbrush has been moderate to heavy over the years with heavier use reported in 1991, 1998, and 2003. Vigor has been good during all readings and percent decadence has remained very low. A few additional preferred shrubs occur on the site. These include small numbers of mountain big sagebrush, mountain mahogany, and elderberry.

Several increaser species, including three species of rabbitbrush, gray horsebrush, and broom snakeweed, are found in the disturbed area. Broom snakeweed increased dramatically from 866 plants/acre in 1985 to 7,280 by 1994. Its density declined 49% to 3,700 plants/acre in 1998 and 3,340 plants/acre in 2003. Age class composition indicates a stable population. Rubber rabbitbrush, Parry rabbitbrush, dwarf rabbitbrush, and narrowleaf low rabbitbrush are found on the site in low to moderate numbers. Use of these shrubs was moderate to heavy in 2003.

Perennial grasses are diverse and provided 40% of the total vegetative cover and 68% of the herbaceous cover in 1998. Common species include the following: bottlebrush squirreltail, mutton bluegrass, blue grama, Indian ricegrass and a sedge. Most grasses showed little use, although the sedge (*Carex* spp) did show some moderate use. Cattle use was not noted in 1985, but spring use was evident in 1991 and cattle had heavily utilized many grasses in 2003. Forbs also show good diversity. Diversity of all herbaceous species is lower up the hill where the ponderosa pine trees are more dominant. Most forbs occur only occasionally and most of the forb cover is provided by redroot eriogonum and Louisiana sagebrush.

1985 APPARENT TREND ASSESSMENT

The soil has been disturbed by fire and subsequent planting and salvaging operations, but the protective ground cover is increasing and the soil appears stable. As the vegetation cover continues to increase and disturbance is kept to a minimum, the soil should improve. Opening up the tree canopy has stimulated growth of herbaceous species. Bitterbrush (a key species) is increasing and vigorous, although heavily hedged. One downward indicator is the presence of several species of undesirable increaser browse which also includes yucca. However, as the site recovers from the fire, the trend appears to be upward.

1991 TREND ASSESSMENT

Percent bare ground has decreased since the last reading, while rock cover has increased. Litter cover has increased by 33%. This site is considered stable, but should be monitored closely for any unusual impacts or changes. A violent ecological event has opened up the once almost closed community to many invader species, which include the following: rabbitbrush, gray horsebrush, broom snakeweed, and yucca. These have all increased since the fire with the exception of bitterbrush. Bitterbrush has declined slightly because most ecotypes do not re-sprout after fire and it will take time for it to fully recover. The herbaceous understory is quite variable with many species of grasses and forbs. Overall, the trend would be up slighty, with an increase in the sum of nested frequency of perennial grasses and forbs.

TREND ASSESSMENT
soil - stable (3)
browse - slightly downward for the key species bitterbrush (2)
herbaceous understory - up slightly (4)

1994 TREND ASSESSMENT

Ground cover characteristics are still improving on this site. Bare ground has declined by 35% since 1991 to 13% cover. Litter cover has declined but the downward pattern is consistent with the drought conditions which have effected the area this spring. Erosion is not a problem on this site. The only abundant and desirable browse species is antelope bitterbrush. The new shrub density estimation procedure, which takes a much larger sample size, estimated 940 mostly mature plants/acre. This lower estimate is due to a reduction in the number of young plants sampled. Density of mature plants actually increased from 466 to 900 plants/acre. No seedlings were encountered and only 2% of the population consists of young plants. On the positive side, percent decadence is low and the proportion of plants heavily hedged declined from 45% in 1991 to only 11% in 1994. The site is still dominated by broom snakeweed and rabbitbrush. Trend for browse is still down slightly with the dominance of increaser species. Sum of nested frequencies for perennial grasses have increased slightly since 1991 while sum of nested frequencies for perennial forbs declined by 48%. Some of this change in composition can be explained by the very dry spring and summer of 1994. Combined nested frequencies of grasses and forbs have declined by 20% since 1991. Trend for the herbaceous understory is down slightly but the decline is likely a combination of the dry conditions and natural post fire succession.

TREND ASSESSMENT
soil - up slightly (4)
browse - slightly down (2)
herbaceous understory - stable (3)

1998 TREND ASSESSMENT

Trend for soil appears stable. Percent bare ground is low and protective ground cover is abundant and well dispersed. Trend for the key browse species, bitterbrush, is stable. Density declined but strip frequency and average cover increased slightly. It appears that there was some difficulty in differentiating individual bitterbrush plants. Use was more intense with heavy use reported on 37% of the bitterbrush. On the positive side, vigor was normal and there were no decadent plants sampled. Young recruitment also improved as 8% of the population now consists of young plants. Another positive sign is the reduction in the population density of broom snakeweed and various rabbitbrush species. Several new browse species were identified on the site in small numbers including mountain big sagebrush, true mountain mahogany, dwarf rabbitbrush, wax currant and elderberry. Trend for the herbaceous understory is up with an increase in the sum of nested frequency of grasses and forbs. Production is also up with increased herbaceous cover.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - up (5)

2003 TREND ASSESSMENT

Trend for soil is up slightly. Relative percent cover of vegetation has remained stable while litter cover has increased slightly. Average cover of bare ground has declined from 12% to 9%. In addition, the ratio of protective ground cover (vegetation, litter, and cryptogams) to bare ground has increased. Erosion is not a problem on this site. Trend for the key browse, bitterbrush, is up. Density has increased 31% while average cover increased nearly 2 fold. Strip frequency also increased. Average vigor is normal on most plants and there are few decadent plants. Bitterbrush were not producing many flowers but annual leader growth was fair in 2003 averaging 2.9 inches. Use was extremely heavy however, with 80% of the plants sampled displaying heavy use. Increaser shrubs, rubber rabbitbrush, Parry rabbitbrush, dwarf rabbitbrush, narrowleaf low rabbitbrush, broom snakeweed, and yucca, have remained similar in total cover and strip frequency since 1998. Overstory cover of ponderosa pine has also remained stable. Overall, the browse trend is slightly up. Trend for the herbaceous understory is down slightly. Sum of nested frequency of perennial grasses declined slightly. Most of the dominant grasses remained stable or increased with the exception of Indian ricegrass and bottlebrush squirreltail. Composition is changing as the warm season grass, blue grama, now provides a larger portion of the total grass cover compared to 1998 (27% to 47%). Nested frequency of cool season species, Indian ricegrass and bottlebrush squirreltail, have declined significantly. Sum of nested frequency of perennial forbs has also declined slightly. Due to the dry conditions of the past 4 spring periods, herbaceous production is down. Total cover of perennial grasses declined 25% while cover of perennial forbs declined 45%. A return to normal precipitation patterns should reverse this trend.

TREND ASSESSMENT
soil - slightly up (4)
browse - slightly up (4)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Management unit 25C, Study no: 3

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
G	Agropyron cristatum	a-	a-	ab5	b15	ab12	.21	.42	.19
G	Agropyron intermedium	-	3	6	5	8	.04	.03	.02
G	Bouteloua gracilis	a51	ab66	ab61	bc97	c119	2.81	4.43	5.84
G	Bromus tectorum (a)	-	-	1	14	1	.00	.33	.01
G	Carex spp.	a23	ab67	b64	b69	b62	.96	1.41	.83
G	Oryzopsis hymenoides	a3	ab18	bc29	c43	ab17	2.22	1.81	.22
G	Poa fendleriana	a48	a85	b98	c147	c155	2.85	5.17	4.18
G	Sitanion hystrix	a62	ab90	a62	b108	a56	.57	2.12	.42
G	Sporobolus cryptandrus	42	27	29	19	33	.77	.42	.58
G	Stipa comata	a5	a3	b36	a15	a9	.87	.55	.05
Total for Annual Grasses		0	0	1	14	1	0.00	0.33	0.00
Total for Perennial Grasses		234	359	390	518	471	11.33	16.38	12.36
Total for Grasses		234	359	391	532	472	11.33	16.72	12.38
F	Alyssum alyssoides (a)	-	-	-	-	2	-	-	.03
F	Allium spp.	a-	a-	ab1	bc10	c12	.00	.10	.05
F	Antennaria parvifolia	11	5	3	3	4	.15	.04	.06
F	Arabis demissa	a1	b42	a-	a3	a-	-	.00	-
F	Artemisia dracunculus	-	-	-	-	1	-	-	.00
F	Artemisia ludoviciana	a81	ab121	ab110	b144	ab108	3.82	4.50	2.04
F	Astragalus convallarius	b13	a-	a-	a-	a-	-	-	-
F	Astragalus spp.	-	-	7	-	1	.09	-	.03
F	Chenopodium album (a)	-	-	5	-	9	.01	-	.04
F	Chaenactis douglasii	2	-	-	-	-	-	-	-
F	Cirsium spp.	-	-	-	3	-	-	.00	-
F	Cryptantha spp.	a-	b105	a6	a-	a2	.02	-	.00
F	Cymopterus spp.	-	-	-	2	-	-	.03	-
F	Descurainia pinnata (a)	-	-	-	5	2	-	.04	.01
F	Eriogonum alatum	3	1	3	6	1	.03	.03	.00
F	Eriogonum cernuum (a)	-	-	2	-	-	.00	-	-
F	Erigeron eatonii	10	7	6	6	1	.01	.04	.00
F	Erigeron flagellaris	-	-	-	-	5	-	-	.15
F	Erigeron pumilus	-	2	3	8	2	.00	.01	.03
F	Eriogonum racemosum	a65	b118	a63	ab85	ab75	.35	1.52	.68
F	Gilia spp. (a)	-	-	-	3	-	-	.03	-

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
F	Hedysarum boreale	-	-	3	5	1	.06	.33	.03
F	Hymenoxys acaulis	-	3	-	1	-	-	.03	-
F	Hymenoxys richardsonii	$_{a}$8	$_{b}$32	$_{ab}$18	$_{a}$9	$_{a}$11	.67	.25	.27
F	Lappula occidentalis (a)	-	-	$_{a}$7	$_{b}$18	$_{ab}$9	.01	.04	.07
F	Lepidium spp. (a)	-	-	$_{a}$-	$_{b}$13	$_{a}$-	-	.03	-
F	Lithospermum spp.	-	-	-	-	1	-	-	.00
F	Lotus utahensis	-	-	-	2	-	-	.00	-
F	Lupinus argenteus	5	-	7	2	-	.04	.03	-
F	Lygodesmia spinosa	5	6	10	5	15	.48	.16	.66
F	Machaeranthera grindelioides	-	-	-	2	-	-	.15	-
F	Penstemon comarrhenus	2	-	-	-	2	-	-	.01
F	Penstemon spp.	$_{a}$1	$_{b}$20	$_{a}$-	$_{a}$-	$_{a}$-	-	-	-
F	Phlox longifolia	-	-	-	3	2	-	.00	.00
F	Polygonum douglasii (a)	-	-	-	3	1	-	.01	.00
F	Potentilla gracilis	$_{a}$-	$_{ab}$6	$_{ab}$5	$_{ab}$2	$_{b}$11	.01	.03	.05
F	Senecio spp.	$_{b}$17	$_{a}$-	$_{a}$-	$_{a}$-	$_{a}$-	-	-	-
F	Sphaeralcea coccinea	10	12	7	15	4	.02	.29	.04
F	Tragopogon dubius	-	-	-	1	-	-	.00	-
F	Unknown forb-perennial	2	-	-	-	-	-	-	-
Total for Annual Forbs		0	0	14	42	23	0.03	0.16	0.15
Total for Perennial Forbs		236	480	252	317	259	5.80	7.60	4.17
Total for Forbs		236	480	266	359	282	5.83	7.76	4.33

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 25C, Study no: 3

Type	Species	Strip Frequency			Average Cover %		
		'94	'98	'03	'94	'98	'03
B	Artemisia nova	4	2	4	.03	.00	.18
B	Artemisia tridentata vaseyana	0	0	0	-	.15	-
B	Cercocarpus montanus	0	1	0	-	.03	-
B	Chrysothamnus depressus	0	7	4	-	.34	.06
B	Chrysothamnus nauseosus	28	20	13	.73	.82	2.72
B	Chrysothamnus parryi	5	9	12	.15	.21	.24
B	Chrysothamnus viscidiflorus stenophyllus	17	17	18	1.57	2.08	.64
B	Gutierrezia sarothrae	70	56	59	1.87	1.45	.70
B	Opuntia spp.	4	1	1	.00	.03	-
B	Pediocactus simpsonii	0	0	1	-	-	.00
B	Pinus edulis	0	0	0	.01	-	-
B	Pinus ponderosa	0	10	10	1.48	3.84	3.73
B	Purshia tridentata	22	28	37	4.10	4.51	8.85
B	Ribes spp.	0	0	0	-	.03	-
B	Sambucus racemosa	3	1	2	-	.03	-
B	Tetradymia canescens	6	9	12	.15	.33	.38
B	Yucca harrimaniae	15	19	20	2.90	2.58	3.66
Total for Browse		174	180	193	13.01	16.46	21.19

CANOPY COVER, LINE INTERCEPT --
Management unit 25C, Study no: 3

Species	Percent Cover	
	'98	'03
Artemisia nova	-	.21
Chrysothamnus nauseosus	-	2.33
Chrysothamnus parryi	-	.05
Chrysothamnus viscidiflorus stenophyllus	-	.36
Gutierrezia sarothrae	-	1.85
Pinus ponderosa	6.19	13.48
Purshia tridentata	-	7.19
Sambucus racemosa	-	.25
Tetradymia canescens	-	.06
Yucca harrimaniae	-	3.20

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 25C, Study no: 3

Species	Average leader growth (in) '03
Purshia tridentata	2.9

POINT-QUARTER TREE DATA --
Management unit 25C, Study no: 3

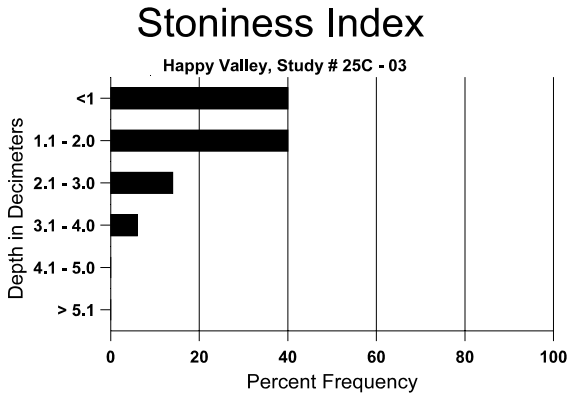
Species	Trees per Acre '98	Trees per Acre '03	Average diameter (in) '98	Average diameter (in) '03
Juniper osteosperma	20	N/A	1.4	N/A
Pinus ponderosa	140	140	4.7	5.8

BASIC COVER --
Management unit 25C, Study no: 3

Cover Type	Average Cover % '85	'91	'94	'98	'03
Vegetation	7.00	7.50	25.82	39.38	35.17
Rock	18.50	27.75	23.07	30.28	26.31
Pavement	11.25	4.75	1.36	8.40	5.92
Litter	26.75	40.00	30.78	39.38	39.93
Cryptogams	0	0	0	.29	0
Bare Ground	36.50	20.00	13.10	15.55	8.84

SOIL ANALYSIS DATA --
Management unit 25C, Study no: 3, Study Name: Happy Valley

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
11.7	61.3 (12.2)	6.5	56.0	21.4	22.6	3.3	21.4	153.6	0.7



PELLET GROUP DATA --
Management unit 25C, Study no: 3

Type	Quadrat Frequency		
	'94	'98	'03
Rabbit	4	4	9
Elk	2	4	1
Deer	14	16	37
Cattle	-	4	6

Days use per acre (ha)	
'98	'03
-	-
1 (2)	5 (12)
11 (27)	61 (150)
15 (37)	14 (34)

BROWSE CHARACTERISTICS --
Management unit 25C, Study no: 3

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Artemisia nova											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**80**	-	-	80	-	20	0	0	-	0	11/18
98	**60**	-	-	60	-	-	0	0	-	0	15/22
03	**160**	-	20	140	-	-	0	0	-	0	8/25
Artemisia tridentata vaseyana											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	0	8/8
98	**0**	-	-	-	-	-	0	0	-	0	11/9
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Cercocarpus montanus											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	0	12/15
98	**20**	-	-	20	-	-	100	0	-	0	13/24
03	**0**	-	-	-	-	-	0	0	-	0	10/17
Chrysothamnus depressus											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**140**	-	20	120	-	-	57	0	-	0	7/14
03	**100**	-	-	100	-	-	40	60	-	0	2/7

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Chrysothamnus nauseosus											
85	**0**	-	-	-	-	-	0	0	0	0	-/-
91	**2732**	5333	2600	66	66	-	12	10	2	0	8/6
94	**860**	20	40	800	20	-	0	0	2	0	16/17
98	**600**	-	40	540	20	-	0	0	3	3	29/31
03	**300**	-	-	200	100	20	13	7	33	0	25/25
Chrysothamnus parryi											
85	**0**	-	-	-	-	-	0	0	0	0	-/-
91	**66**	-	66	-	-	-	0	0	0	0	-/-
94	**180**	-	-	180	-	-	44	44	0	0	4/11
98	**220**	-	40	180	-	-	0	0	0	0	9/15
03	**440**	-	20	300	120	-	68	14	27	0	8/11
Chrysothamnus viscidiflorus stenophyllus											
85	**466**	66	200	266	-	-	0	0	0	0	9/7
91	**199**	133	133	-	66	-	0	0	33	33	-/-
94	**940**	-	20	880	40	-	13	0	4	0	12/27
98	**360**	-	-	340	20	-	22	11	6	0	7/22
03	**800**	20	120	640	40	-	38	18	5	0	12/17
Gutierrezia sarothrae											
85	**866**	800	266	600	-	-	0	0	0	0	9/7
91	**5532**	1066	666	4600	266	-	2	0	5	2	10/12
94	**7280**	460	1980	5040	260	1320	0	0	4	1	6/6
98	**3700**	440	220	3480	-	20	0	0	0	0	9/8
03	**3340**	-	200	3100	40	-	0	0	1	0	7/7
Opuntia spp.											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**320**	-	20	300	-	-	0	0	-	0	2/7
98	**20**	-	-	20	-	-	0	0	-	0	2/4
03	**20**	-	-	20	-	-	0	0	-	0	2/7
Pediocactus simpsonii											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**20**	-	-	20	-	-	0	0	-	0	2/2

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Pinus ponderosa											
85	**133**	66	-	133	-	-	0	0	0	100	69/79
91	**399**	66	200	133	66	-	0	17	17	17	234/89
94	**0**	-	-	-	-	-	0	0	0	0	-/-
98	**200**	40	180	20	-	40	0	0	0	0	-/-
03	**200**	-	140	60	-	-	0	0	0	0	-/-
Purshia tridentata											
85	**1666**	466	1466	200	-	-	12	8	0	4	10/19
91	**1465**	-	866	466	133	-	36	45	9	5	5/15
94	**940**	-	20	900	20	20	32	11	2	2	14/41
98	**760**	40	60	700	-	-	45	37	0	0	17/49
03	**1100**	-	40	980	80	-	20	80	7	2	17/47
Quercus gambelii											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**0**	-	-	-	-	-	0	0	-	0	40/75
03	**0**	-	-	-	-	-	0	0	-	0	27/15
Ribes spp.											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Sambucus racemosa											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
94	**140**	-	-	140	-	-	0	0	-	0	23/22
98	**20**	-	-	20	-	-	0	0	-	0	25/32
03	**40**	-	20	20	-	-	0	50	-	0	20/30
Tetradymia canescens											
85	**66**	-	66	-	-	-	0	0	0	0	-/-
91	**132**	-	66	66	-	-	50	0	0	0	6/9
94	**120**	-	20	100	-	-	33	0	0	0	7/13
98	**200**	20	20	180	-	-	30	0	0	0	9/14
03	**260**	-	40	180	40	-	38	38	15	8	7/11

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Yucca harrimaniae											
85	**1333**	400	1133	200	-	-	0	0	0	0	8/9
91	**2333**	333	2000	333	-	-	0	0	0	0	9/15
94	**1580**	-	40	1540	-	-	0	0	0	0	13/22
98	**1520**	-	240	1240	40	-	0	0	3	1	14/23
03	**1400**	-	620	760	20	40	0	0	1	1	14/20